PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2002-101379
(43)Date of publication of application : 05.04.2002

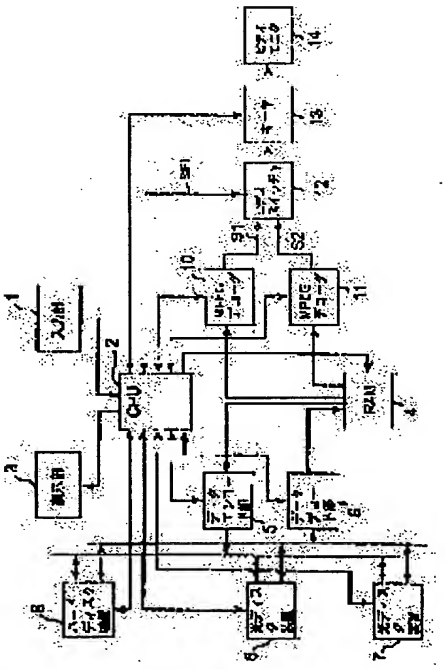
(51)Int.Cl. H04N 5/91
G11B 20/10
H04N 5/44
H04N 5/445
H04N 5/85
H04N 5/907
H04N 5/765
H04N 5/92
H04N 5/937

(21)Application number : 2000-286996
(22)Date of filing : 21.09.2000

(71)Applicant : SONY CORP
(72)Inventor : MAGAI MITSUTOSHI

(54) RECORDING AND REPRODUCING DEVICE AND METHOD

(57)Abstract:
PROBLEM TO BE SOLVED: To realize recording and reproducing method and device capable of editing compressed material without inviting image deterioration.
SOLUTION: Compressed material before an editing point and compressed material after the editing point are read from a recording medium and stored in a RAM 4, the compressed material before the editing point and the compressed material after the editing point are respectively read in time division from the RAM 4 at a reproducing speed of ≥1 double speed and parallelly decoded by MPEG decoders 10 and 11, and a video switcher 12 switches a baseband video signal before the editing point and a baseband video signal after the editing point obtained in this way at the editing point and makes the time bases meet each other. Therefore, decoding (xpansion)/recoding (compression) does not have to be repeated any more between a baseband and the compression material as in th conventional practice whenever editing is performed, and it is consequently possible to edit the compressed material without inviting the image deterioration.



LEGAL STATUS

[Date of request for examination]

[Dat of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the xaminer's decision of rejection or application converted r gistration]

[Date of final disposal for application]

[Patent number]

[Dat of registration]

[Numb r of app al against xamin r's d cision of rej ction]

[Dat of requesting app al against xamin r's d cision of rej ction]

[Dat of xtinction of right]

CLAIMS

[Claim(s)]

[Claim 1] The record regenerative apparatus characterized by providing the following. the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least — the record medium with which th compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — a temporary storage means to read and store temporarily the compression material of the actual making of the tea, and the compression material after an editing point the edit from this temporary storage means — parallel [read / to time sharing / the compression material of the actual making of the tea, and the compression material after an editing point, at the speed of 1X or more and] —-like — decoding — edit — a decode means to generate the material of the actual making of the tea, and the material after an editing point the edit which this decode means generated — the editing point of having specified the material of the actual making of the tea, and the material after an editing point — changing — edit — the actual making of the tea — a reproduction means to double the time-axis of each next material and to reproduce

[Claim 2] The record reproduction method characterized by providing the following. the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least — the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — the temporary storage process which reads and stores temporarily the compression material of the actual making of the tea, and the compression material after an editing point the edit stored temporarily in this temporary storage process — parallel [read / to time sharing / the compression material of the actual making of the tea, and the compression material after an editing point at the speed of 1X or more and] —-like — decoding — edit — the decode process which generates the material of the actual making of the tea, and the material after an editing point the edit generated in this decode process — the editing point of having specified the material of the actual making of the tea, and the material after an editing point — changing — edit — the actual making of the tea — the renewal process which doubles the time-axis of each next material and is r produced

[Claim 3] The record regenerative apparatus characterized by providing the following. the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least — the record medium with which th compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — a decode means to read and decode the compression material of the actual making of the tea, and the compression material after an editing point at the speed of 1X or more the edit which this decode means generated — a temporary storage means to store temporarily the material of the actual making of the tea, and the material after an editing point the edit memorized by this temporary storage means — it changes in [editing] that the material of the actual making of the tea and the material after an editing point were sp cified — as — reading — edit — the actual making of the tea — a reproduction means to double the time-axis of ach next material and to reproduce

[Claim 4] The record reproduction method characterized by providing the following. the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least — the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were r corded the edit from this record medium — decode process in which the compression material of the actual making of the tea and the compression material after an editing point are read and decoded at the speed of 1X or mor the edit generated in this decode process — the temporary storage process which stores temporarily the material of the actual making of the tea, and the material after an editing point the edit stored temporarily in this temporary storage process — it changes in [editing] that the material of the actual making of the tea and the material after an editing point were specified — as — reading — edit — the actual making of the tea — the renewal process which doubles the time-axis of each next material and is reproduced

[Claim 5] The record regenerative apparatus characterized by providing the following. the edit to which the edge l ft for applying past of 1 or mor GOPs was added forward and backward at l ast — th record medium with which the compr ssion material of the actual making of the t a and th compression mat rial after an editing point w re r cord d th dit from this record m dium — a temporary storag means to r ad and stor temporarily th c mpr ssion material f th actual making f th tea, and th compr ssion mat rial aft r an editing point th edit fr m this t mp rary storag m ans — parall l [r ading th compression material of th actual making of th t a, and the compr ssion mat rial aft r an diting point to time sharing at th speed of 1X or more] —-lik — d coding — dit — a decod m ans to gen rat th material of th actual making of th t a, and th material aft r an diting

point the dit which this decode means generated — the material of the actual making of the tea, and the material after an diting point — an editing point — changing — dit — with a reproduction m ans to reproduce the edit material which doubl d the time-axis of th mat rial of th actual making of the tea, and th material after an editing point th dit mad applicable to dit at least — the actual making of th tea — th r cord means which carri s out m dium r cord of th dit information showing the chang mode in an attribute, a next diting point position, and a n xt editing point, and th alphab tic information superimposed for an edit mat rial individually, r spectiv ly

[Claim 6] The record reproduction method characterized by providing the following. the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least — the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were r corded the edit from this record medium — the temporary storage process which reads and stores temporarily the compression material of the actual making of the tea, and the compression material after an editing point the edit stored temporarily in this temporary storage process — parallel [reading the compression material of the actual making of the tea, and the compression material after an editing point to time sharing at the speed of 1X or mor] —like — decoding — edit — the decode process which generates the material of the actual making of th tea, and the material after an editing point the edit generated in this decode process — the material of the actual making of the tea, and the material after an editing point — an editing point — changing — edit — with the renewal process which reproduces the edit material which doubled the time-axis of the material of the actual making of the tea, and the material after an editing point the edit made applicable to edit at least — the actual making of the tea — the record process which carries out medium record of the edit information showing the change mode in each attribute, the next editing point position, and the next editing point of a compression material, and the alphabetic information superimposed for an edit material individually, respectively

---

[Translation done.]

* NOTICES *

1.This document has b n translat d by computer. So th translation may not r flect th original precis ly.
2.**** shows th word which can not b translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Th technical field to which invention belongs] this invention relates to the record reproduction method and record regenerative apparatus which carry out record reproduction of the video signal by which compression coding was carried out for example, by the MPEG (Moving Picture Experts Group) method.
[0002]
[Description of the Prior Art] Compression coding of the video signal (a compression material is called hereafter) by which compression coding was carried out by the MPEG method etc. is carried out considering the group called GOP (Group Of Pictures) which collected the drawings for two or more frames (picture) as one unit. By the MPEG method, since compression coding is carried out using frame correlation of a GOP unit, restrictions arise in edit. exceptional — so-called closed one of 1 frame 1GOP — if it is GOP, a problem will not be produced even if it performs cut edit which made the break and the editing point of GOP in agreement
[0003] However, if edit which is simply connected with other compression materials is performed when required information is in the contiguity frame of a video signal in 1GOP at decode, the information on a picture is mixed and decode is not correctly carried out by the knot, but a picture will be confused or it will become the cause of noise generating. It edits, once it carries out the decode (extension) of the compression material and returns it to baseband, in order for the reason to connect on other compression materials and a time-axis or to edit putting in special effect, such as wipe and DEZORUBU, etc., and compression coding is again carried out after edit, and it is made to obtain a compression material.
[0004]
[Problem(s) to be Solved by the Invention] By the way, in this edit mode, whenever it edits, as a result of repeating decode (extension) / re-sign (compression) between baseband and a compression material, there is a problem of inviting picture degradation. Then, this invention was made in view of such a situation, and it aims at offering the record reproduction method and record regenerative apparatus into which a compression material can be edited, without inviting picture degradation.
[0005]
[M ans for Solving the Problem] In order to attain the above-mentioned purpose, in invention according to claim 1 th dit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least — with the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — with a temporary storage means to read and store temporarily the compression material of the actual making of the tea, and the compression material after an editing point the edit from this temporary storage means — parallel [read / to time sharing / the compression material of the actual making of the tea, and the compression material after an editing point at the speed of 1X or more and] —like — decoding — edit — with a decode means to generate the material of the actual making of the tea, and the material after an editing point the edit which this decode means generated — th editing point of having specified the material of the actual making of the tea, and the material after an editing point — changing — edit — the actual making of the tea — it is characterized by providing a reproduction means to double the time-axis of each next material and to reproduce
[0006] the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least in invention according to claim 2 — with the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — with the temporary storage process which reads and stores temporarily the compression material of th actual making of the tea, and the compression material after an editing point the edit stored temporarily in this t mporary storage process — parallel [read / to time sharing / the compression material of the actual making of the tea, and the compression material after an editing point at the speed of 1X or more and] —like — decoding — edit — with th dec d pr c ss which generates the mat rial of th actual making of th t a, and the material after an editing point the dit gen rat d in this d cod proc ss — th diting point of having sp cified th mat rial of th actual making of th t a, and th mat rial aft r an diting point — changing — edit — th actual making of th tea — it is characteriz d by pr viding th r newal pr c ss which doubl s th time-axis of ach n xt material and is reproduc d
[0007] th dit to which th edg l ft for applying past of 1 or more GOPs was added forward and backward at least in invention acc rding to claim 3 — with th r cord medium with which th c mpression material of the actual

making of the tea and th compression material after an editing point were recorded the edit from this record medium — with a decode m ans to read and decode the compression material of the actual making of th tea, and the compression mat rial after an diting point at th speed of 1X or mor the dit which this decode m ans generated — with a temporary storag m ans to store temporarily the material of th actual making of th tea, and th material after an diting point th dit memorized by this t mporary storag m ans — it changes in [editing] that the material of th actual making of the tea and th mat rial aft r an diting point wer specified — as — reading — dit — th actual making of the t a — it is charact rized by providing a reproduction means to double th time-axis of each next material and to reproduce

[0008] the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least in invention according to claim 4 — with the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — with decode process in which the compression material of the actual making of the tea and the compression material after an editing point are read and decoded at the speed of 1X or more the edit generated in this decode process — with the temporary storage process which stores temporarily the material of the actual making of the tea, and the material after an editing point the edit stored temporarily in this temporary storage process — it changes in [editing] that the material of the actual making of the tea and the material after an editing point were specified — as — reading — edit — the actual making of the tea — it is characterized by providing the renewal process which doubles the time-axis of each next material and is reproduced

[0009] the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least in invention according to claim 5 — with the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — with a temporary storage means to read and store temporarily the compression material of the actual making of the tea, and the compression material after an editing point the edit from this temporary storage means — — parallel [reading the compression material of the actual making of the tea, and the compression material after an editing point to time sharing at the speed of 1X or more] ---like — decoding — edit — with a decode means to generate the material of the actual making of the tea, and the material after an editing point the edit which this decode means generated — the material of the actual making of the tea, and the material after an editing point — an editing point — changing — edit — with a reproduction means to reproduce the edit material which doubled the time-axis of the material of the actual making of the tea, and the material after an editing point the edit made applicable to edit at least — the actual making of the tea — it is characterized by providing the record means which carries out medium record of the edit information showing the change mode in an attribute, a next editing point position, and a next editing point, and the alphabetic information superimposed for an edit material individually, respectively

[0010] the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least in invention according to claim 6 — with the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — with the temporary storage process which reads and stores temporarily the compression material of the actual making of the tea, and the compression material after an editing point the edit stored temporarily in this temporary storage process — parallel [reading the compression material of the actual making of the tea, and th compression material after an editing point to time sharing at the speed of 1X or more] ---like — decoding — edit — with the decode process which generates the material of the actual making of the tea, and the material after an diting point the edit generated in this decode process — the material of the actual making of the tea, and the material after an editing point — an editing point — changing — edit — with the renewal process which reproduces th edit material which doubled the time-axis of the material of the actual making of the tea, and the material after an diting point the edit made applicable to edit at least — the actual making of the tea — it is characterized by providing the record process which carries out medium record of the edit information showing the change mode in each attribute, the next editing point position, and the next editing point of a compression material, and the alphabetic information superimposed for an edit material individually, respectively

[0011] The compression material of the actual making of the tea and the compression material after an editing point are read and stored temporarily. the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least in this invention — the edit from the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded — Read th compression material of the actual making of the tea, and the compression material after an editing point at the speed of 1X or more, and they are decoded. this edit stored temporarily — edit — the edit after generating the material of the actual making of the tea, and the material after an editing point — the editing point of having specified the material of the actual making of the tea, and the material after an editing point — changing — edit — th actual making of the tea — since the time-axis of each next material is doubled and it reproduces, it becomes p ssibl to dit a compression mat rial, without inviting pictur degradation

[0012]

[Embodiments of th Invention] H reafter, on g stalt of perati n f this inv ntion is xplain d with r f r nc to a drawing.

(1) A block diagram 1 is a block diagram sh wing th compositi n of the record r g nerativ apparatus by on g stalt of operation of this inv ntion. In this drawing, th input section 1 is quipped with alt r op rati n childr n, such as a k yboard and a mous , g nerates the ev nt which directs x cution f mat rial r production, r cord, and

edit according to operation of these alter operation child, and outputs it to CPU2. CPU2 performs the control program loaded to the system memory which is not illustrated according to th vent supplied from th input section 1, and controls each part of quipment to perform material reproduction, record, and edit. A display 3 consists of for xample, LCD displays tc., and carries out a screen display of an established state, a mod of operation, tc. of each part of equipm nt according to th display-control signal supplied from CPU2.
[0013] RAM4 is equipped with a data area and a work area. Various register flag data ar stored temporarily in th work area of RAM4. On th other hand, the MPEG data suppli d from th data decoding section 9 mentioned later are stored temporarily at the data area of RAM4. The data encoding section 5 changes and outputs the MPEG data read from the data area of RAM4 according to directions of CPU2 to the data format illustrated to drawing 2 .
[0014] That is, it changes into the file data FD which formed Header HD in the head after adding the "edge left for applying paste" of 1 or more GOPs before and after the MPEG data read from the data area of RAM4 so that it might illustrate to drawing 2 , and formed Footer FT in the back end, respectively. Header HD and Footer FT consist of two or more attribute items showing the contents of a file, such as a file size. In addition, the "edge left for applying paste" of 1 or more GOPs added before and after MPEG data is dummy data for performing reproduction of 1X or more.
[0015] Optical disk units 6 and 7 record the file data FD (refer to drawing 2) outputted according to the record directions from CPU2 from the data encoding section 5 or a hard disk drive unit 8, respectively on an optical disk, or reproduce the file data FD by which reproduction directions are carried out from CPU2 among the file data FD recorded on an optical disk, and output it to the data decoding section 9 or a hard disk drive unit 8. In addition, the file data FD recorded on an optical disk is preferably arranged in order of reproduction, and carries out medium record. If file data FD is arranged in order of reproduction and medium record is carried out, correspondence will become possible also with the cheap optical disk units 6 and 7 with a low reproduction rate.
[0016] While a hard disk drive unit 8 records the file data FD outputted from the file data FD by which a reproduction output is carried out from optical disk units 6 and 7, or the data encoding section 5 according to the record directions from CPU2, it reproduces the file data FD by which reproduction directions are carried out from CPU2 among the recorded file data FD, and outputs it to optical disk units 6 and 7 or the data decoding section 9. Moreover, the control program is memorized by this hard disk drive unit 8, and the control program is transmitted to the system memory which is not illustrated at the time of an equipment boot rise. Under control of CPU2, the data decoding section 9 extracts MPEG data from the file data FD which optical disk units 6 and 7 or a hard disk drive unit 8 reproduces, and they carry out a store to the data area of RAM4.
[0017] The MPEG decoders 10 and 11 decode in parallel the MPEG data read from the data area of RAM4 to time sharing, and output the video signals S1 and S2 of baseband to the bottom of control of CPU2. The video switcher 12 changes the video signals S1 and S2 outputted, respectively at an editing point from the MPEG decoders 10 and 11 of the preceding paragraph according to the change signal SEL which CPU2 generates according to editing point specification operation in the input section 1. A keyer 13 superimposes the alphabetic information given to the vid o signal S1 (S2) changed by the video switcher 12 from CPU2. A video monitor 14 carries out a screen display of the edit d video signal.
[0018] (2) Perform and give edit operation ****** explanation in the edit equipment by operation, next the above-mentioned composition. Here, explanation of operation is given at an editing point, using as an example cut edit changed from the compression material A recorded on the optical disk unit 6 to the compression material B r corded on the optical disk unit 7. If first specification operation is carried out so that the compression materials A and B may be made applicable to edit in the input section 1, it is directed to an optical disk unit 6 that CPU2 reproduces the file data FD which contains the compression material A (MPEG data A) according to the operation. Th reby, an optical disk unit 6 carries out the reproduction output of the file data FD containing the compression material A (MPEG data A).
[0019] Next, it is directed that CPU2 decodes the file data FD by which a reproduction output is carried out from an optical disk unit 6 to the data decoding section 9. Then, while the data decoding section 9 divides the file data FD into header HD / footer FT (refer to drawing 2), and the MPEG data A and transmits header HD / footer FT to the CPU2 side, it carries out the store of the separated MPEG data A to the data area of RAM4. If it finishes carrying out the store of the MPEG data A to the data area of RAM4, the file data FD which contains like **** the compression material B (MPEG data B) reproduced from an optical disk unit 7 will be made to decode in the data decoding section 9, and the store of the MPEG data B obtained by this will be carried out to the data area of RAM4.

[0020] if the both sides of the MPEG data A and B made applicable to edit are stored in the data area of RAM4 — editing point specification operation in the input section 1 — corresponding — CPU2 — edit — the MPEG data A which are the compression material A of the actual making of the tea are read from the data area of RAM4 Under the present circumstances, it reads from the need of preparing the "edge left for applying paste" mentioned abov before and after the editing point, by th reproduction speed 1X or more, and th MPEG d coder 10 is supplied. And befor read-out t an diting p int finish s, it is begun by th r production sp ed 1X or mor to read the MPEG data B which are the compr ssion mat rial B aft r an diting point from th data ar a of RAM4, and th MPEG decoder 11 is supplied.
[0021] In this way, if th MPEG data A and B ar r ad fr m the data area of RAM4 to tim sharing and it is inputted into the MPEG d coders 10 and 11 in parall l, respectively, at th MPEG d coder 10, th baseband vide signal A which comes to decod th MPEG data A will b outputt d, and, n th ther hand, th bas band vide signal B

which comes to decode the MPEG data B will be outputted by the MPEG decoder 11. A screen display of the baseband vid o signals A and B outputted from the MPEG decoders 10 and 11, respectively is carried out to a video monitor 14 as an dit material which was changed at the diting point and continu d on the tim -axis so that it may be inputt d into the video switcher 12 and may illustrate to drawing 2 .

[0022] In addition, in the vid o switcher 12 which changes th baseband video signals A and B, it is also possible to giv special ffect, such as wipe from which it changes to a back picture aft r DEZORUBU, straight line, and curve th picture befor and b hind an editing point changes lapping mov by changing a change mode b sides the cut edit changed from the baseband video signal A to the baseband video signal B in an instant.

[0023] The file data FD which stored the compression material of the actual making of the tea, and the file data FD which stored the compression material after an editing point are read from a record medium. thus — the gestalt of this operation — edit — The store of the MPEG data respectively extracted from these file data FD is carried out to RAM4. the edit from this RAM4 — by the reproduction speed of each 1X or more, the MPEG data of the actual making of the tea and the MPEG data after an editing point were read to time sharing, and were decoded in parallel by the MPEG decoders 10 and 11 — edit, since the baseband video signal of the actual making of the tea and the baseband video signal after an editing point are changed with an editing point by the video switcher 12 and a time-axis is doubled Whenever it edits, as a result of it becoming unnecessary to repeat decode (extension) / re-sign (compression) between baseband and a compression material like before, it is possible to edit a compression material, without inviting picture degradation.

[0024] By the way, since it edits so that a time-axis may be doubled in case not the thing that carries out edit processing of the compression material by which medium record was carried out directly with the gestalt of this operation but the compression material by which medium record was carried out is decoded to baseband and it reproduces, the edited image will be carried out as a compression material, and carrying out medium record will not carry out, but medium record will be carried out in the edit information express the content of edit. That is, if medium record of the edit information showing the attribute (header HD / footer FT of each file data FD which stored the compression material before and behind an editing point), editing point position, and baseband change mode (cut edit, DEZORUBU, or wipe) of the file data FD made applicable to edit is carried out, it will become possible to read it and to reproduce an edit material. Moreover, by the keyer 13, the alphabetic information superimposed for an edit material carries out medium record individually rather than is recorded in the state where it put on the edit material, or, in addition to edit information, medium record is carried out, and in case an edit material is reproduced, it becomes the form superimposed for the edit material which reads it and is reproduced.

[0025] In addition, after the MPEG data A and B which are the candidates for edit store in the data area of RAM4 with the gestalt of operation mentioned above The MPEG data A and B are read to time sharing by the reproduction speed 1X or more before and behind an editing point. the edit after decoding it in parallel by the MPEG decoders 10 and 11, although the baseband video signal of the actual making of the tea and the baseband video signal after an editing point are changed with an editing point by the video switcher 12 and the time-axis was doubled Change to this, decode in parallel the MPEG data A and B read from the record medium by the reproduction speed 1X or mor by th MPEG decoders 10 and 11, and it stores in the data area of RAM4. the edit stored in the data area of this RAM4 — you may make it the composition read and reproduced so that the baseband video signal of the actual making of the tea and the baseband video signal after an editing point may be changed at an editing point Moreover, although the material by which MPEG compression was carried out was made applicable to edit with the gestalt of op ration mentioned above, the summary of this invention is not limited to this, but can be applied by other animation compression methods other than an MPEG method.

[0026]

[Effect of the Invention] The compression material of the actual making of the tea and the compression material aft r an editing point are read and stored temporarily. the edit to which the edge left for applying paste of 1 or m re GOPs was added forward and backward at least according to invention given in claims 1 and 2 — the edit from the r cord medium with which the compression material of the actual making of the tea and the compression material aft r an editing point were recorded — Read the compression material of the actual making of the tea, and the compression material after an editing point to time sharing at the speed of 1X or more, and it decodes in parallel. this dit stored temporarily — edit — the edit after generating the material of the actual making of the tea, and the material after an editing point — the editing point of having specified the material of the actual making of the tea, and the material after an editing point — changing — edit — the actual making of the tea — since the time-axis f each next material is doubled and it reproduces, a compression material can be edited, without inviting picture degradation Read the compression material of the actual making of the tea, and the compression material after an editing point at the speed of 1X or more, and they are decoded. the edit to which the edge left for applying paste f 1 or more GOPs was added forward and backward at least according to invention given in claims 3 and 4 — the edit from the record medium with which the compression material of the actual making of the tea and the compression material after an diting point wer rec rd d — dit — th dit which generated and generat d th mat rial of the actual making of th tea, and th mat rial aft r an editing point, aft r storing t mporarily th mat rial of th actual making f th tea, and th material after an editing point this dit stor d t mporarily — it chang s in [editing] that th mat rial of th actual making of th tea and th material after an diting point wer specifi d — as — r ading — dit — th actual making of th t a — since th tim -axis f ach n xt mat rial is doubl d and it reproduc s, a compr ssion mat rial can be dit d, with ut inviting pictur degradation th edit to which th dge-left for applying past of 1 or m r GOPs was add d f r th r production m ans forward and backward at least according to

inv ntion according to claim 5, if th compr ssion material of th actual making of th tea and the compression material after an editing point ar reproduced from a r cord medium and stored in a temporary storag means Th material of th actual making of th tea and th mat rial after an editing point ar gen rat d. a decod m ans — the edit from this temporary storag m ans — parallel [r ading the compr ssion material of the actual making of the t a, and th compr ssion mat rial after an editing point to time sharing at th speed of 1X or mor] —like — decoding — edit — an dit means — edit — th mat rial of the actual making of the tea, and th material after an diting point — an editing point — changing — dit — since the edit material which doubl d the tim -axis of the material of the actual making of the tea and the material after an editing point is generated and displayed, a compression material can be edited, without inviting picture degradation moreover, the edit to which the record means was made the candidate for edit at least — the actual making of the tea — if the edit information and alphabetic information are read from a record medium and referred to in order to carry out medium record of the dit information showing the change mode in an attribute, a next editing point position, and a next editing point, and th alphabetic information superimposed for an edit material individually, respectively, the same edit as last time can be performed The compression material of the actual making of the tea and the compression material after an editing point are reproduced and stored temporarily from the record medium. the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least according to invention according to claim 6 — The material of the actual making of the tea and the material after an editing point are generated. this edit stored temporarily — parallel [reading the compression material of the actual making of the tea, and the compression material after an editing point to time sharing at the speed of 1X or more] —like — decoding — edit — the generated edit — the material of the actual making of the tea, and the material after an editing point — an editing point — changing — edit — since the edit material which doubled the time-axis of the material of the actual making of the tea and the material after an editing point is generated and displayed, a compression material can be edited, without inviting picture degradation moreover, the edit made applicable to edit at least — the actual making of the tea — if the edit information and alphabetic information are read from a record medium and referred to in order to carry out medium record of the edit information showing the change mode in each attribute, the next editing point position, and the next editing point of a compression material, and the alphabetic information superimposed for an edit material individually, respectively, the same edit as last time can be performed

---

[Translation done.]

* NOTICES *

1.This document has been translat d by comput r. So th translation may not reflect th riginal pr cisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL FIELD

[The technical field to which invention belongs] this invention relates to the record reproduction method and record r generative apparatus which carry out record reproduction of the video signal by which compression coding was carried out for example, by the MPEG (Moving Picture Experts Group) method.

[Translation done.]

PRIOR ART

[Description of the Prior Art] Compression coding of the video signal (a compression material is called hereafter) by which compression coding was carried out by the MPEG method etc. is carried out considering the group called GOP (Group Of Pictures) which collected the drawings for two or more frames (picture) as one unit. By the MPEG method, since compression coding is carried out using frame correlation of a GOP unit, restrictions arise in edit. exceptional -- so-called closed one of 1 frame 1GOP -- if it is GOP, a problem will not be produced even if it performs cut edit which made the break and the editing point of GOP in agreement

[0003] However, if edit which is simply connected with other compression materials is performed when required information is in the contiguity frame of a video signal in 1GOP at decode, the information on a picture is mixed and decode is not correctly carried out by the knot, but a picture will be confused or it will become the cause of noise generating. It edits, once it carries out the decode (extension) of the compression material and returns it to baseband, in order for the reason to connect on other compression materials and a time-axis or to edit putting in special effect, such as wipe and DEZORUBU, etc., and compression coding is again carried out after edit, and it is made to obtain a compression material.

[Translation done.]

* NOTICES *

1.This document has b n translat d by comput r. So th translation may not reflect th original precisely.
2.**** shows the word which can not b translated.
3.In the drawings, any words are not translated.

EFFECT OF THE INVENTION

[Effect of the Invention] The compression material of the actual making of the tea and the compression material after an editing point are read and stored temporarily. the edit to which the edge left for applying paste of 1 or mor GOPs was added to claims 1 and 2 forward and backward at least by invention of a publication — the edit from the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded — Read the compression material of the actual making of the tea, and the compression material after an editing point to time sharing at the speed of 1X or more, and it decodes in parallel. this edit stored temporarily — edit — the edit after generating the material of the actual making of the tea, and the material after an editing point — the editing point of having specified the material of the actual making of the tea, and the material after an editing point — changing — edit — the actual making of the tea — the time-axis of each next material is doubled and it reproduces Therefore, a compression material can be edited, without inviting picture degradation. Read the compression material of the actual making of the tea, and the compression material after an editing point at the speed of 1X or more, and they are decoded. the edit to which the edge left for applying paste of 1 or more GOPs was added to claims 3 and 4 forward and backward at least by invention of a publication — the edit from the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded — edit — the edit which generated and generated the material of the actual making of the tea, and the material after an editing point, after storing temporarily the material of the actual making of the tea, and the material after an editing point this edit stored temporarily — it changes in [editing] that the material of the actual making of the tea and the material after an editing point were specified — as — reading — — edit — the actual making of the tea — the time-axis of each next material is doubled and it reproduces Therefore, a compression material can be edited, without inviting picture degradation. the edit to which the edge left for applying paste of 1 or more GOPs was added for the reproduction means forward and backward at least in invention according to claim 5, if the compression material of the actual making of the tea and the compression material after an editing point are reproduced from a record medium and stored in a temporary storage means The material of the actual making of the tea and the material after an editing point are generated. a decode means — th dit from this temporary storage means — parallel [reading the compression material of the actual making of th tea, and the compression material after an editing point to time sharing at the speed of 1X or more] —like — decoding — edit — an edit means — edit — the material of the actual making of the tea, and the material after an editing point — an editing point — changing — edit — the edit material which doubled the time-axis of the material of the actual making of the tea and the material after an editing point is generated and displayed Therefore, a compression material can be edited, without inviting picture degradation. moreover, the edit to which the record means was made the candidate for edit at least — the actual making of the tea — if the edit information and alphabetic information are read from a record medium and referred to in order to carry out medium record of the edit information showing the change mode in an attribute, a next editing point position, and a next editing point, and th alphabetic information superimposed for an edit material individually, respectively, the same edit as last time can b performed the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at l ast according to invention according to claim 6 — the compression material of the actual making of the tea, and the compression material after an editing point — from a record medium — reproducing The material of the actual making of the tea and the material after an editing point are generated. storing temporarily — this edit stored temporarily — parallel [reading the compression material of the actual making of the tea, and the compression mat rial after an editing point to time sharing at the speed of 1X or more] —like — decoding — edit — the g nerated edit — the material of the actual making of the tea, and the material after an editing point — an editing point — changing — edit — since the edit material which doubled the time-axis of the material of the actual making of the tea and the material after an editing point is generated and displayed, a compression material can be edited, without inviting picture degradation moreover, the edit made applicable to edit at least — the actual making of th t a — if the edit information and alphabetic information are read from a record medium and referred to in order to carry out m dium r cord of th dit information showing th chang m d in each attribut , th next diting point position, and the next diting point of a compression material, and th alphab tic information sup rimposed for an edit material individually, resp ctively, th sam dit as last time can be perform d

---

[Translation don .]

* NOTICES *

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, in this edit mode, whenever it edits, as a result of repeating decode (extension) / re-sign (compression) between baseband and a compression material, there is a problem of inviting picture degradation. Then, this invention was made in view of such a situation, and it aims at offering the record reproduction method and record regenerative apparatus into which a compression material can be edited, without inviting picture degradation.

[Translation done.]

* NOTICES *

MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, in invention according to claim 1 the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least — with the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — with a temporary storage means to read and store temporarily the compression material of the actual making of the tea, and the compression material after an editing point the edit from this temporary storage means — parallel [read / to time sharing / the compression material of the actual making of the tea, and the compression material after an editing point at the speed of 1X or more and] ---like — decoding — edit — with a decode means to generate the material of the actual making of the tea, and the material after an editing point the edit which this decode means generated — the editing point of having specified the material of the actual making of the tea, and the material after an editing point — changing — edit — the actual making of the tea — it is characterized by providing a reproduction means to double the time-axis of each next material and to reproduce

[0006] the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least in invention according to claim 2 — with the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — with the temporary storage process which reads and stores temporarily the compression material of th actual making of the tea, and the compression material after an editing point the edit stored temporarily in this temporary storage process — parallel [read / to time sharing / the compression material of the actual making of the tea, and the compression material after an editing point at the speed of 1X or more and] ---like — decoding — edit — with the decode process which generates the material of the actual making of the tea, and the material after an editing point the edit generated in this decode process — the editing point of having specified the material of the actual making of the tea, and the material after an editing point — changing — edit — the actual making of the tea — it is characterized by providing the renewal process which doubles the time-axis of each next material and is r produced

[0007] the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at l ast in invention according to claim 3 — with the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — with a decode means to read and decode the compression material of the actual making of the tea, and the compression material after an editing point at the speed of 1X or more the edit which this decode means g nerated — with a temporary storage means to store temporarily the material of the actual making of the tea, and the material after an editing point the edit memorized by this temporary storage means — it changes in [editing] that the material of the actual making of the tea and the material after an editing point were specified — as — reading — edit — the actual making of the tea — it is characterized by providing a reproduction means to doubl the time-axis of each next material and to reproduce

[0008] the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least in invention according to claim 4 — with the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — with decode process in which the compression material of the actual making of the tea and the compression material after an editing point are read and decoded at the speed of 1X or more the edit generated in this decode process — with the temporary storage process which stores temporarily the material of the actual making of the tea, and the material after an editing point the edit stored temporarily in this temporary storage proc ss — it changes in [editing] that the material of the actual making of the tea and the material after an editing point were specified — as — reading — edit — the actual making of the tea — it is characterized by providing the renewal process which doubles the time-axis of each next material and is reproduced

[0009] the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at l ast in inv ntion according to claim 5 — with the record medium with which th compr ssi n material of th actual making of th t a and the compr ssion material aft r an diting point wer recorded th dit fr m this record medium — with a temporary storage means to r ad and stor t mporarily th compr ssion mat rial of th actual making of the t a, and th c mpression mat rial aft r an diting point the dit from this t mporary storage m ans — parall l [reading th compression material of th actual making of th tea, and th compression mat rial aft r an editing p int to tim sharing at the spe d of 1X or mor] ——lik — d c ding — edit — with a d c d m ans t generat th material of th actual making of th t a, and th material aft r an editing point the dit which this

decode m ans generated — the material of the actual making of the tea, and th material after an editing point — an diting point — changing — edit — with a reproduction means to reproduce the dit material which doubled the time-axis of the mat rial of the actual making of the tea, and the material after an editing point th edit mad applicable to edit at l ast — the actual making of th tea — it is charact rized by providing th record m ans which carries out m dium record of th dit information showing th change mode in an attribut , a next diting point position, and a next diting point, and the alphabetic information superimposed for an edit mat rial individually, respectively

[0010] the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least in invention according to claim 6 — with the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded the edit from this record medium — with the temporary storage process which reads and stores temporarily the compression material of the actual making of the tea, and the compression material after an editing point the edit stored temporarily in this temporary storage process — parallel [reading the compression material of the actual making of the tea, and the compression material after an editing point to time sharing at the speed of 1X or more] —-like — decoding — edit — with the decode process which generates the material of the actual making of the tea, and the material after an editing point the edit generated in this decode process — the material of the actual making of the tea, and the material after an editing point — an editing point — changing — edit — with the renewal process which reproduces the edit material which doubled the time-axis of the material of the actual making of the tea, and the material after an editing point the edit made applicable to edit at least — the actual making of the tea — it is characterized by providing the record process which carries out medium record of the edit information showing the change mode in each attribute, the next editing point position, and the next editing point of a compression material, and the alphabetic information superimposed for an edit material individually, respectively

[0011] The compression material of the actual making of the tea and the compression material after an editing point are read and stored temporarily. the edit to which the edge left for applying paste of 1 or more GOPs was added forward and backward at least in this invention — the edit from the record medium with which the compression material of the actual making of the tea and the compression material after an editing point were recorded — Read the compression material of the actual making of the tea, and the compression material after an editing point at the speed of 1X or more, and they are decoded. this edit stored temporarily — edit — the edit after generating the material of the actual making of the tea, and the material after an editing point — the editing point of having specified the material of the actual making of the tea, and the material after an editing point — changing — edit — the actual making of the tea — since the time-axis of each next material is doubled and it reproduces, it becomes possible to edit a compression material, without inviting picture degradation

[0012]

[Embodiments of the Invention] Hereafter, one gestalt of operation of this invention is explained with reference to a drawing. The <BR (1)> block diagram 1 is a block diagram showing the composition of the record regenerative apparatus by one gestalt of operation of this invention. In this drawing, the input section 1 is equipped with alter operation children, such as a keyboard and a mouse, generates the event which directs execution of material r production, record, and edit according to operation of these alter operation child, and outputs it to CPU2. CPU2 performs the control program loaded to the system memory which is not illustrated according to the event suppli d from the input section 1, and controls each part of equipment to perform material reproduction, record, and edit. A display 3 consists of for example, LCD displays etc., and carries out a screen display of an established state, a mode of operation, etc. of each part of equipment according to the display-control signal supplied from CPU2.

[0013] RAM4 is equipped with a data area and a work area. Various register flag data are stored temporarily in th work area of RAM4. On the other hand, the MPEG data supplied from the data decoding section 9 mentioned later are stored temporarily at the data area of RAM4. The data encoding section 5 changes and outputs the MPEG data read from the data area of RAM4 according to directions of CPU2 to the data format illustrated to drawing 2 .

[0014] That is, it changes into the file data FD which formed Header HD in the head after adding the "edge left for applying paste" of 1 or more GOPs before and after the MPEG data read from the data area of RAM4 so that it might illustrate to drawing 2 , and formed Footer FT in the back end, respectively. Header HD and Footer FT consist of two or more attribute items showing the contents of a file, such as a file size. In addition, the "edge left for applying paste" of 1 or more GOPs added before and after MPEG data is dummy data for performing reproduction of 1X or more.

[0015] Optical disk units 6 and 7 record the file data FD (refer to drawing 2) outputted according to the record dir ctions from CPU2 from the data encoding section 5 or a hard disk drive unit 8, respectively on an optical disk, r reproduce the file data FD by which reproduction directions are carried out from CPU2 among the file data FD rec rded on an optical disk, and output it to the data decoding section 9 or a hard disk drive unit 8. In addition, th file data FD recorded on an optical disk is preferably arranged in order of reproduction, and carries out medium record. If fil data FD is arrang d in rd r of reproduction and medium record is carri d ut, c rr spondenc will becom possibl als with th ch ap optical disk units 6 and 7 with a low reproduction rat .

[0016] While a hard disk driv unit 8 records th fil data FD outputt d fr m the fil data FD by which a r production output is carried out from optical disk units 6 and 7, or th data encoding section 5 acc rding to th r c rd directi ns from CPU2, it r pr duc s th fil data FD by which r production directions ar carri d out from CPU2 among th r c rd d fil data FD, and outputs it t ptical disk units 6 and 7 or th data d c ding s ction 9. Moreover, the contr l program is m moriz d by this hard disk driv unit 8, and th control program is transmitted to

the syst m memory which is not illustrated at the time of an quipment boot rise. Under control of CPU2, th data decoding section 9 extracts MPEG data from the file data FD which optical disk units 6 and 7 or a hard disk driv unit 8 reproduces, and they carry out a store to the data ar a of RAM4.
[0017] Th MPEG decoders 10 and 11 decode in parallel th MPEG data read from th data area of RAM4 to tim sharing, and output th video signals S1 and S2 of baseband to th bottom of control of CPU2. The vid o switcher 12 changes the vid o signals S1 and S2 outputted, respectively at an diting point from th MPEG decoders 10 and 11 of th pr ceding paragraph according to th chang signal SEL which CPU2 gen rates according to diting point specification operation in the input section 1. A keyer 13 superimposes the alphabetic information given to the video signal S1 (S2) changed by the video switcher 12 from CPU2. A video monitor 14 carries out a screen display of th edited video signal.
[0018] (2) Perform and give edit operation ****** explanation in the edit equipment by operation, next the above-mentioned composition. Here, explanation of operation is given at an editing point, using as an example cut edit changed from the compression material A recorded on the optical disk unit 6 to the compression material B recorded on the optical disk unit 7. If first specification operation is carried out so that the compression materials A and B may be made applicable to edit in the input section 1, it is directed to an optical disk unit 6 that CPU2 reproduces the file data FD which contains the compression material A (MPEG data A) according to the operation. Thereby, an optical disk unit 6 carries out the reproduction output of the file data FD containing the compression material A (MPEG data A).
[0019] Next, it is directed that CPU2 decodes the file data FD by which a reproduction output is carried out from an optical disk unit 6 to the data decoding section 9. Then, while the data decoding section 9 divides the file data FD into header HD / footer FT (refer to drawing 2), and the MPEG data A and transmits header HD / footer FT to the CPU2 side, it carries out the store of the separated MPEG data A to the data area of RAM4. If it finishes carrying out the store of the MPEG data A to the data area of RAM4, the file data FD which contains like **** the compression material B (MPEG data B) reproduced from an optical disk unit 7 will be made to decode in the data decoding section 9, and the store of the MPEG data B obtained by this will be carried out to the data area of RAM4.

[0020] if the both sides of the MPEG data A and B made applicable to edit are stored in the data area of RAM4 — editing point specification operation in the input section 1 — corresponding — CPU2 — edit — the MPEG data A which are the compression material A of the actual making of the tea are read from the data area of RAM4 Under the present circumstances, it reads from the need of preparing the "edge left for applying paste" mentioned above before and after the editing point, by the reproduction speed 1X or more, and the MPEG decoder 10 is supplied. And before read-out to an editing point finishes, it is begun by the reproduction speed 1X or more to read the MPEG data B which are the compression material B after an editing point from the data area of RAM4, and the MPEG decoder 11 is supplied.
[0021] In this way, if the MPEG data A and B are read from the data area of RAM4 to time sharing and it is inputted into the MPEG decoders 10 and 11 in parallel, respectively, at the MPEG decoder 10, the baseband video signal A which comes to decode the MPEG data A will be outputted, and, on the other hand, the baseband video signal B which comes to decode the MPEG data B will be outputted by the MPEG decoder 11. A screen display of the baseband video signals A and B outputted from the MPEG decoders 10 and 11, respectively is carried out to a video monitor 14 as an edit material which was changed at the editing point and continued on the time-axis so that it may b inputted into the video switcher 12 and may illustrate to drawing 2 .
[0022] In addition, in the video switcher 12 which changes the baseband video signals A and B, it is also possible to give special effect, such as wipe from which it changes to a back picture after DEZORUBU, straight line, and curve th picture before and behind an editing point changes lapping move by changing a change mode besides the cut edit changed from the baseband video signal A to the baseband video signal B in an instant.
[0023] The file data FD which stored the compression material of the actual making of the tea, and the file data FD which stored the compression material after an editing point are read from a record medium. thus — the form of this operation — edit — The store of the MPEG data respectively extracted from these file data FD is carried out to RAM4. the edit from this RAM4 — by the reproduction speed of each 1X or more, the MPEG data of the actual making of the tea and the MPEG data after an editing point were read to time sharing, and were decoded in parallel by the MPEG decoders 10 and 11 — edit, since the baseband video signal of the actual making of the tea and th baseband video signal after an editing point are changed with an editing point by the video switcher 12 and a time-axis is doubled Whenever it edits, as a result of it becoming unnecessary to repeat decode (extension) / re-sign (compression) between baseband and a compression material like before, it is possible to edit a compression material, without inviting picture degradation.
[0024] By the way, since it edits so that a time-axis may be doubled in case not the thing that carries out edit processing of the compression material by which medium record was carried out directly with the form of this operation but the compression mat rial by which medium record was carri d ut is decoded to baseband and it r produc s, th dit d image will b carried out as a compression mat rial, and carrying out medium r c rd will not carry out, but medium r c rd will b carri d out in the edit inf rmati n xpr ss th cont nts of edit. That is, if m dium r cord of th dit information showing the attribut (h ader HD / fo ter FT f ach fil data FD which stored th compr ssi n mat rial befor and behind an diting p int), editing p int positi n, and bas band change mod (cut edit, DEZORUBU, r wip) f th fil data FD mad applicable t dit is carri d ut, it will b com p ssible t r ad it and to reproduc an edit mat rial. M r v r, by th k yer 13, th alphab tic inf rmation

superimposed for an edit material carri s out medium record individually rather than is recorded in the stat where it put on the edit material, or, in addition to dit information, medium record is carried out, and in case an edit material is reproduced, it becomes th form superimposed for the dit material which r ads it and is reproduc d. [0025] In addition, after th MPEG data A and B which ar th candidates for edit stor in the data area of RAM4 with the form of operation mention d abov Th MPEG data A and B are read to tim sharing by the r production sp ed 1X or mor befor and behind an diting point. the edit after d coding it in parallel by the MPEG decoders 10 and 11, although the baseband video signal of the actual making of th tea and the bas band vid o signal after an editing point are changed with an editing point by the video switcher 12 and the time-axis was doubled Change to this, decode in parallel the MPEG data A and B read from the record medium by the reproduction speed 1X or mor by the MPEG decoders 10 and 11, and it stores in the data area of RAM4. the edit stored in the data area of this RAM4 — you may make it the composition read and reproduced so that the baseband video signal of the actual making of the tea and the baseband video signal after an editing point may be changed at an editing point Moreover, although the material by which MPEG compression was carried out was made applicable to edit with the form of operation mentioned above, the summary of this invention is not limited to this, but can be applied by other animation compression methods other than an MPEG method.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

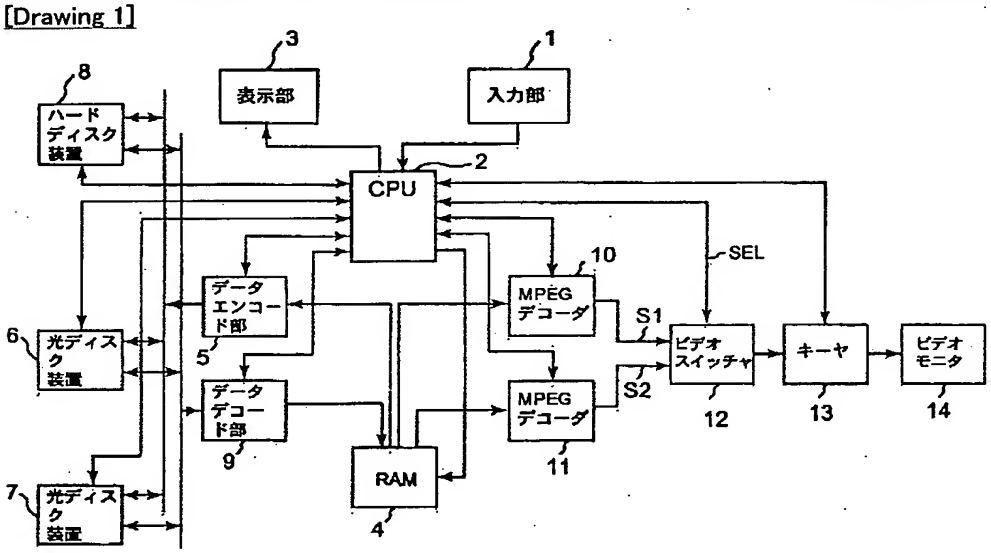
DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the composition of the edit equipment which is one gestalt of operation by this invention.
[Drawing 2] It is drawing showing the composition of file data FD.
[Drawing 3] It is drawing for explaining edit operation.
[Description of Notations]
1 [— A display, 4 / — RAM, 5 / — 6 The data encoding section 7 / — An optical disk unit, 8 / — A hard disk drive unit, 9 / — 10 The data decoding section 11 / — An MPEG decoder, 12 / — A video switcher, 13 / — A keyer, 14 / — Video monitor.] — The input section, 2 — CPU, 3

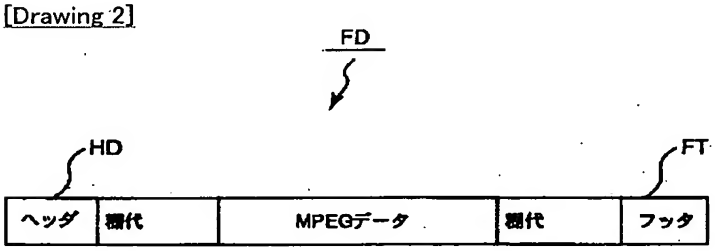
[Translation done.]

DRAWINGS

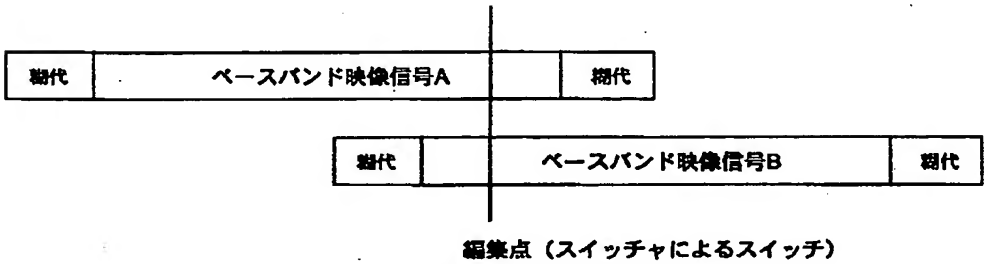
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Translation done.]

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号
特開2002－101379
（P2002－101379A）
(43)公開日　平成14年４月５日(2002.4.5)

(51)Int.Cl.⁷	識別記号	Ｆ Ｉ		テーマコード（参考）
Ｈ０４Ｎ　5/91		Ｇ１１Ｂ　20/10	Ｇ	５Ｃ０２５
Ｇ１１Ｂ　20/10		Ｈ０４Ｎ　5/44	Ａ	５Ｃ０５２
Ｈ０４Ｎ　5/44		5/445	Ｚ	５Ｃ０５３
5/445		5/85	Ｚ	５Ｄ０４４
5/85		5/907	Ｂ	

審査請求　未請求　請求項の数６　ＯＬ　（全７頁）　最終頁に続く

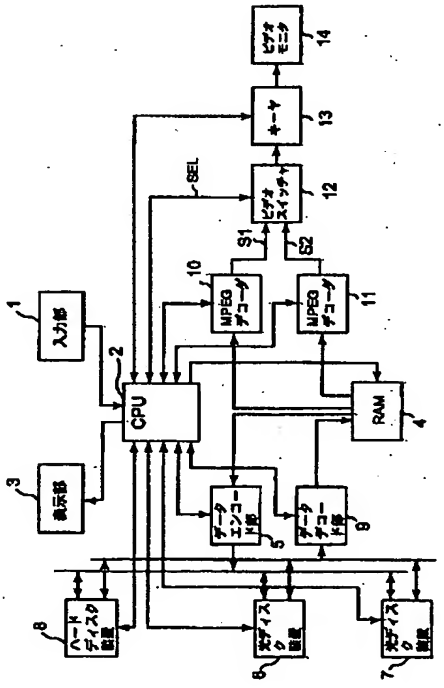
(21)出願番号　特願2000－286996(P2000－286996)
(22)出願日　平成12年９月21日(2000.9.21)

(71)出願人　000002185
ソニー株式会社
東京都品川区北品川６丁目７番35号
(72)発明者　真貝　光俊
東京都品川区北品川６丁目７番35号　ソニー株式会社内

最終頁に続く

(54)【発明の名称】　記録再生装置および記録再生方法

(57)【要約】
【課題】　画像劣化を招致することなく圧縮素材を編集することができる記録再生方法および装置を実現する。
【解決手段】　編集点前の圧縮素材と編集点後の圧縮素材とを記録媒体から読み出してＲＡＭ４にストアしておき、このＲＡＭ４から編集点前の圧縮素材と編集点後の圧縮素材とを各々１倍速以上の再生速度で時分割に読み出してＭＰＥＧデコーダ１０，１１にて並列的に復号し、これにより得られる編集点前のベースバンド映像信号と編集点後のベースバンド映像信号とをビデオスイッチャ１２にて編集点で切り替えて時間軸を合わせるので、従来のように、編集を行う都度、ベースバンドと圧縮素材との間で復号（伸長）／再符号（圧縮）を繰り返す必要がなくなる結果、画像劣化を招致することなく圧縮素材を編集できる。



【特許請求の範囲】

【請求項１】　少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、

この記録媒体から編集点前の圧縮素材および編集点後の圧縮素材を読み出して一時記憶する一時記憶手段と、

この一時記憶手段から編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で時分割に読み出して並列的に復号し、編集点前の素材と編集点後の素材とを生成する復号手段と、

この復号手段が生成した編集点前の素材と編集点後の素材とを指定した編集点で切り替え、編集点前後の各素材の時間軸を合わせて再生する再生手段とを具備することを特徴とする記録再生装置。

【請求項２】　少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、

この記録媒体から編集点前の圧縮素材および編集点後の圧縮素材を読み出して一時記憶する一時記憶過程と、

この一時記憶過程にて一時記憶された編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で時分割に読み出して並列的に復号し、編集点前の素材と編集点後の素材とを生成する復号過程と、

この復号過程にて生成された編集点前の素材と編集点後の素材とを指定した編集点で切り替え、編集点前後の各素材の時間軸を合わせて再生する再生過程とを具備することを特徴とする記録再生方法。

【請求項３】　少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、

この記録媒体から編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で読み出して復号する復号手段と、

この復号手段が生成した編集点前の素材および編集点後の素材を一時記憶する一時記憶手段と、

この一時記憶手段に記憶された編集点前の素材と編集点後の素材とを指定した編集点で切り替えるように読み出して編集点前後の各素材の時間軸を合わせて再生する再生手段とを具備することを特徴とする記録再生装置。

【請求項４】　少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、

この記録媒体から編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で読み出して復号する復号過程と、

この復号過程にて生成された編集点前の素材および編集点後の素材を一時記憶する一時記憶過程と、

この一時記憶過程にて一時記憶された編集点前の素材と編集点後の素材とを指定した編集点で切り替えるように読み出して編集点前後の各素材の時間軸を合わせて再生する再生過程とを具備することを特徴とする記録再生方法。

【請求項５】　少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、

この記録媒体から編集点前の圧縮素材および編集点後の圧縮素材を読み出して一時記憶する一時記憶手段と、

この一時記憶手段から編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で時分割に読み出しながら並列的に復号し、編集点前の素材と編集点後の素材とを生成する復号手段と、

この復号手段が生成した編集点前の素材と編集点後の素材とを編集点で切り替え、編集点前の素材と編集点後の素材との時間軸を合わせた編集素材を再生する再生手段と、

少なくとも編集対象にされた編集点前後の属性、編集点位置および編集点での切り替え態様を表す編集情報と、編集素材にスーパーインポーズされる文字情報とをそれぞれ個別に媒体記録する記録手段とを具備することを特徴とする記録再生装置。

【請求項６】　少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、

この記録媒体から編集点前の圧縮素材および編集点後の圧縮素材を読み出して一時記憶する一時記憶過程と、

この一時記憶過程にて一時記憶された編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で時分割に読み出しながら並列的に復号し、編集点前の素材と編集点後の素材とを生成する復号過程と、

この復号過程にて生成された編集点前の素材と編集点後の素材とを編集点で切り替え、編集点前の素材と編集点後の素材との時間軸を合わせた編集素材を再生する再生過程と、

少なくとも編集対象にされた編集点前後の圧縮素材の各属性、編集点位置および編集点での切り替え態様を表す編集情報と、編集素材にスーパーインポーズされる文字情報とをそれぞれ個別に媒体記録する記録過程とを具備することを特徴とする記録再生方法。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、例えばＭＰＥＧ（Moving Picture Experts Group）方式で圧縮符号化された映像信号を記録再生する記録再生方法および記録再生装置に関する。

【０００２】

【従来の技術】ＭＰＥＧ方式などで圧縮符号化された映像信号（以下、圧縮素材と称す）は、複数フレーム分の画（ピクチャ）を集めたＧＯＰ（Group Of Pictures）と呼ばれるグループを一つの単位として圧縮符号化されている。ＭＰＥＧ方式ではＧＯＰ単位のフレーム相関を

用いて圧縮符号化される為、編集に制約が生じる。例外的に１フレーム１ＧＯＰの所謂、クローズドＧＯＰであれば、ＧＯＰの切れ目と編集点を一致させたカット編集を行っても問題は生じない。

【０００３】しかしながら、１ＧＯＰの中で映像信号の隣接フレームに復号に必要な情報がある場合には単純に他の圧縮素材と繋ぐような編集を行うと、画像の情報が混じり合い繋ぎ目で正しく復号されず画像が乱れたりノイズ発生の原因となる。その為、他の圧縮素材と時間軸上で繋ぎ合わせたり、ワイプやデゾルブ等の特殊効果を入れるなどの編集を行うには、圧縮素材を一旦、復号（伸長）してベースバンドに戻してから編集を施し、編集後に再び圧縮符号化して圧縮素材を得るようにしている。

【０００４】

【発明が解決しようとする課題】ところで、かかる編集態様では、編集を行う都度、ベースバンドと圧縮素材との間で復号（伸長）／再符号（圧縮）を繰り返す結果、画像劣化を招致する、という問題がある。そこで本発明は、このような事情に鑑みてなされたもので、画像劣化を招致することなく圧縮素材を編集することができる記録再生方法および記録再生装置を提供することを目的としている。

【０００５】

【課題を解決するための手段】上記目的を達成するため、請求項１に記載の発明では、少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、この記録媒体から編集点前の圧縮素材および編集点後の圧縮素材を読み出して一時記憶する一時記憶手段と、この一時記憶手段から編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で時分割に読み出して並列的に復号し、編集点前の素材と編集点後の素材とを生成する復号手段と、この復号手段が生成した編集点前の素材と編集点後の素材とを指定した編集点で切り替え、編集点前後の各素材の時間軸を合わせて再生する再生手段とを具備することを特徴とする。

【０００６】請求項２に記載の発明では、少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、この記録媒体から編集点前の圧縮素材および編集点後の圧縮素材を読み出して一時記憶する一時記憶過程と、この一時記憶過程にて一時記憶された編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で時分割に読み出して並列的に復号し、編集点前の素材と編集点後の素材とを生成する復号過程と、この復号過程にて生成された編集点前の素材と編集点後の素材とを指定した編集点で切り替え、編集点前後の各素材の時間軸を合わせて再生する再生過程とを具備することを特徴とする。

【０００７】請求項３に記載の発明では、少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、この記録媒体から編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で読み出して復号する復号手段と、この復号手段が生成した編集点前の素材および編集点後の素材を一時記憶する一時記憶手段と、この一時記憶手段に記憶された編集点前の素材と編集点後の素材とを指定した編集点で切り替えるように読み出して編集点前後の各素材の時間軸を合わせて再生する再生手段とを具備することを特徴とする。

【０００８】請求項４に記載の発明では、少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、この記録媒体から編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で読み出して復号する復号過程と、この復号過程にて生成された編集点前の素材および編集点後の素材を一時記憶する一時記憶過程と、この一時記憶過程にて一時記憶された編集点前の素材と編集点後の素材とを指定した編集点で切り替えるように読み出して編集点前後の各素材の時間軸を合わせて再生する再生過程とを具備することを特徴とする。

【０００９】請求項５に記載の発明では、少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、この記録媒体から編集点前の圧縮素材および編集点後の圧縮素材を読み出して一時記憶する一時記憶手段と、この一時記憶手段から編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で時分割に読み出しながら並列的に復号し、編集点前の素材と編集点後の素材とを生成する復号手段と、この復号手段が生成した編集点前の素材と編集点後の素材とを編集点で切り替え、編集点前の素材と編集点後の素材との時間軸を合わせた編集素材を再生する再生手段と、少なくとも編集対象にされた編集点前後の属性、編集点位置および編集点での切り替え態様を表す編集情報と、編集素材にスーパーインポーズされる文字情報とをそれぞれ個別に媒体記録する記録手段とを具備することを特徴とする。

【００１０】請求項６に記載の発明では、少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体と、この記録媒体から編集点前の圧縮素材および編集点後の圧縮素材を読み出して一時記憶する一時記憶過程と、この一時記憶過程にて一時記憶された編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で時分割に読み出しながら並列的に復号し、編集点前の素材と編集点後の素材とを生成する復号過程と、この復号過程にて生成された編集点前の素材と編集点後の素材とを編集点で切り替え、編集点前の素材と編集点後の素材との時間軸を合わせた編集素材を再生する再生過程と、少なくとも編集対象にされた編集点前後の圧縮素材の各属性、編

集点位置および編集点での切り替え態様を表す編集情報と、編集素材にスーパーインポーズされる文字情報とをそれぞれ個別に媒体記録する記録過程とを具備することを特徴とする。

【００１１】本発明では、少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体から編集点前の圧縮素材および編集点後の圧縮素材を読み出して一時記憶しておき、この一時記憶された編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で読み出して復号し、編集点前の素材と編集点後の素材とを生成した後、編集点前の素材と編集点後の素材とを指定した編集点で切り替え、編集点前後の各素材の時間軸を合わせて再生するので、画像劣化を招致することなく圧縮素材を編集することが可能になる。

【００１２】

【発明の実施の形態】以下、図面を参照して本発明の実施の一形態について説明する。

（１）構成

図１は、本発明の実施の一形態による記録再生装置の構成を示すブロック図である。この図において、入力部１はキーボードやマウス等の入力操作子を備え、これら入力操作子の操作に応じて、素材再生、記録および編集の実行を指示するイベントを発生してＣＰＵ２に出力する。ＣＰＵ２は図示されていないシステムメモリにロードされた制御プログラムを、入力部１から供給されるイベントに応じて実行し、素材再生、記録および編集を行うよう装置各部を制御する。表示部３は、例えばＬＣＤディスプレイ等から構成され、ＣＰＵ２から供給される表示制御信号に応じて装置各部の設定状態や動作モード等を画面表示する。

【００１３】ＲＡＭ４は、データエリアとワークエリアとを備える。ＲＡＭ４のワークエリアには、各種レジスタ・フラグデータが一時記憶される。一方、ＲＡＭ４のデータエリアには、後述するデータデコード部９から供給されるＭＰＥＧデータが一時記憶される。データエンコード部５は、ＣＰＵ２の指示に応じてＲＡＭ４のデータエリアから読み出されるＭＰＥＧデータを図２に図示するデータ形式に変換して出力する。

【００１４】すなわち、図２に図示するように、ＲＡＭ４のデータエリアから読み出されたＭＰＥＧデータの前後に１ＧＯＰ以上の「糊代」を付加した上、その先頭にはヘッダＨＤを、後端にはフッタＦＴをそれぞれ設けたファイルデータＦＤに変換する。ヘッダＨＤおよびフッタＦＴはファイルサイズ等のファイル内容を表す複数の属性項目から構成される。なお、ＭＰＥＧデータの前後に付加される１ＧＯＰ以上の「糊代」とは、１倍速以上の再生を行うためのダミーデータである。

【００１５】光ディスク装置６，７は、それぞれＣＰＵ２からの記録指示に従い、データエンコード部５あるいはハードディスク装置８から出力されるファイルデータＦＤ（図２参照）を光ディスクに記録したり、光ディスクに記録されるファイルデータＦＤの内、ＣＰＵ２から再生指示されるファイルデータＦＤを再生してデータデコード部９あるいはハードディスク装置８に出力する。なお、光ディスクに記録されるファイルデータＦＤは、好ましくは再生順に並べて媒体記録する。ファイルデータＦＤを再生順に並べて媒体記録しておけば、再生レートの低い安価な光ディスク装置６，７でも対応可能になる。

【００１６】ハードディスク装置８は、ＣＰＵ２からの記録指示に従い、光ディスク装置６，７から再生出力されるファイルデータＦＤもしくはデータエンコード部５から出力されるファイルデータＦＤを記録する一方、記録したファイルデータＦＤの内、ＣＰＵ２から再生指示されるファイルデータＦＤを再生して光ディスク装置６，７あるいはデータデコード部９に出力する。また、このハードディスク装置８には、制御プログラムが記憶されており、その制御プログラムは装置ブートアップ時に図示されていないシステムメモリに転送される。データデコード部９は、ＣＰＵ２の制御の下に、光ディスク装置６，７あるいはハードディスク装置８が再生するファイルデータＦＤからＭＰＥＧデータを抽出してＲＡＭ４のデータエリアにストアする。

【００１７】ＭＰＥＧデコーダ１０，１１は、ＣＰＵ２の制御の下に、ＲＡＭ４のデータエリアから時分割に読み出されるＭＰＥＧデータを並列的に復号してベースバンドの映像信号Ｓ１，Ｓ２を出力する。ビデオスイッチャ１２は、入力部１での編集点指定操作に応じてＣＰＵ２が発生する切り替え信号ＳＥＬに従い、前段のＭＰＥＧデコーダ１０，１１からそれぞれ出力される映像信号Ｓ１，Ｓ２を編集点で切り替える。キーヤ１３はビデオスイッチャ１２にて切り替えられた映像信号Ｓ１（Ｓ２）に、ＣＰＵ２から与えられる文字情報等をスーパーインポーズする。ビデオモニタ１４は編集された映像信号を画面表示する。

【００１８】（２）動作

次に、上記構成による編集装置において実行される編集動作ついて説明する。ここでは、編集点で光ディスク装置６に記録された圧縮素材Ａから光ディスク装置７に記録された圧縮素材Ｂに切り替えるカット編集を一例として動作説明する。最初に、入力部１において圧縮素材Ａ，Ｂを編集対象にするよう指定操作すると、ＣＰＵ２はその操作に応じて圧縮素材Ａ（ＭＰＥＧデータＡ）を含むファイルデータＦＤを再生するよう光ディスク装置６に指示する。これにより、光ディスク装置６は圧縮素材Ａ（ＭＰＥＧデータＡ）を含むファイルデータＦＤを再生出力する。

【００１９】次に、ＣＰＵ２はデータデコード部９に対し、光ディスク装置６から再生出力されるファイルデー

タＦＤをデコードするよう指示する。すると、データデコード部９は、そのファイルデータＦＤをヘッダＨＤ／フッタＦＴ（図２参照）とＭＰＥＧデータＡとに分離し、ヘッダＨＤ／フッタＦＴをＣＰＵ２側に転送する一方、分離したＭＰＥＧデータＡをＲＡＭ４のデータエリアにストアする。ＭＰＥＧデータＡをＲＡＭ４のデータエリアにストアし終えたら、上述と同様に、光ディスク装置７から再生される圧縮素材Ｂ（ＭＰＥＧデータＢ）を含むファイルデータＦＤをデータデコード部９にてデコードさせ、これにより得られるＭＰＥＧデータＢをＲＡＭ４のデータエリアにストアする。

【００２０】編集対象とされたＭＰＥＧデータＡ，Ｂの双方がＲＡＭ４のデータエリアに格納されると、入力部１での編集点指定操作に対応してＣＰＵ２が編集点前の圧縮素材ＡであるＭＰＥＧデータＡをＲＡＭ４のデータエリアから読み出す。この際、編集点前後に前述した「糊代」を設ける必要性から１倍速以上の再生速度で読み出してＭＰＥＧデコーダ１０に供給する。そして、編集点までの読み出しが終わる前に、編集点後の圧縮素材ＢであるＭＰＥＧデータＢをＲＡＭ４のデータエリアから１倍速以上の再生速度で読み出し始めてＭＰＥＧデコーダ１１に供給する。

【００２１】こうして、ＲＡＭ４のデータエリアからＭＰＥＧデータＡ，Ｂが時分割に読み出されてＭＰＥＧデコーダ１０，１１にそれぞれ並列的に入力されると、ＭＰＥＧデコーダ１０ではＭＰＥＧデータＡを復号してなるベースバンド映像信号Ａを出力し、一方、ＭＰＥＧデコーダ１１ではＭＰＥＧデータＢを復号してなるベースバンド映像信号Ｂを出力する。ＭＰＥＧデコーダ１０，１１からそれぞれ出力されるベースバンド映像信号Ａ，Ｂは、ビデオスイッチャ１２に入力され、図２に図示するように、編集点で切り替えられ、時間軸上で連続した編集素材としてビデオモニタ１４に画面表示される。

【００２２】なお、ベースバンド映像信号Ａ，Ｂを切り替えるビデオスイッチャ１２では、ベースバンド映像信号Ａから一瞬にしてベースバンド映像信号Ｂに切り替えるカット編集の他、切り替え態様を変化させることで、編集点の前後の画像が重なりつつ切り替わるデゾルブや、直線や曲線が動いたあとが後ろの画像に切り替わるワイプなどの特殊効果を付与することも可能になっている。

【００２３】このように、本実施の形態では、編集点前の圧縮素材を格納したファイルデータＦＤと編集点後の圧縮素材を格納したファイルデータＦＤとを記録媒体から読み出し、それらファイルデータＦＤから各々抽出したＭＰＥＧデータをＲＡＭ４にストアしておき、このＲＡＭ４から編集点前のＭＰＥＧデータと編集点後のＭＰＥＧデータとを各々１倍速以上の再生速度で時分割に読み出してＭＰＥＧデコーダ１０，１１にて並列的に復号した、編集点前のベースバンド映像信号と編集点後のベースバンド映像信号とをビデオスイッチャ１２にて編集点で切り替えて時間軸を合わせるので、従来のように、編集を行う都度、ベースバンドと圧縮素材との間で復号（伸長）／再符号（圧縮）を繰り返す必要がなくなる結果、画像劣化を招致することなく圧縮素材を編集することが可能になっている。

【００２４】ところで、本実施の形態では、媒体記録された圧縮素材を直接的に編集加工するものではなく、媒体記録された圧縮素材をベースバンドに復号して再生する際に時間軸を合わせるように編集するので、編集された映像を圧縮素材として媒体記録することはせず、その編集内容を表す編集情報を媒体記録することになる。つまり、編集対象にしたファイルデータＦＤの属性（編集点前後の圧縮素材を格納した各ファイルデータＦＤのヘッダＨＤ／フッタＦＴ）、編集点位置およびベースバンド切り替え態様（カット編集、デゾルブあるいはワイプ）を表す編集情報を媒体記録しておけば、それを読み出して編集素材を再生することが可能になる。また、キーヤ１３によって編集素材にスーパーインポーズされる文字情報なども編集素材に重ねた状態で記録するのではなく、個別に媒体記録するか、もしくは編集情報に加えて媒体記録しておき、編集素材を再生する際にそれを読み出して再生される編集素材にスーパーインポーズする形になる。

【００２５】なお、上述した実施の形態では、編集対象であるＭＰＥＧデータＡ，ＢがＲＡＭ４のデータエリアに蓄えてから、編集点前後でＭＰＥＧデータＡ，Ｂを１倍速以上の再生速度で時分割に読み出し、それをＭＰＥＧデコーダ１０，１１にて並列的に復号した後、編集点前のベースバンド映像信号と編集点後のベースバンド映像信号とをビデオスイッチャ１２にて編集点で切り替えて時間軸を合わせるようにしたが、これに替えて、記録媒体から１倍速以上の再生速度で読み出したＭＰＥＧデータＡ，ＢをＭＰＥＧデコーダ１０，１１にて並列的に復号してＲＡＭ４のデータエリアに蓄え、このＲＡＭ４のデータエリアに蓄えた編集点前のベースバンド映像信号と編集点後のベースバンド映像信号とを編集点で切り替えるように読み出して再生する構成にしても良い。また、上述した実施の形態では、ＭＰＥＧ圧縮された素材を編集対象としたが、本発明の要旨はこれに限定されず、ＭＰＥＧ方式以外の他の動画圧縮方式でも適用可能である。

【００２６】

【発明の効果】請求項１，２に記載の発明によれば、少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体から編集点前の圧縮素材および編集点後の圧縮素材を読み出して一時記憶しておき、この一時記憶された編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で時分割に読み出して並列的に復号し、編集点

前の素材と編集点後の素材とを生成した後、編集点前の素材と編集点後の素材とを指定した編集点で切り替え、編集点前後の各素材の時間軸を合わせて再生するので、画像劣化を招致することなく圧縮素材を編集することができる。請求項３，４に記載の発明によれば、少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材が記録された記録媒体から編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で読み出して復号し、編集点前の素材と編集点後の素材とを生成し、生成した編集点前の素材および編集点後の素材を一時記憶した後、この一時記憶された編集点前の素材と編集点後の素材とを指定した編集点で切り替えるように読み出して編集点前後の各素材の時間軸を合わせて再生するので、画像劣化を招致することなく圧縮素材を編集することができる。請求項５に記載の発明によれば、再生手段が少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材を記録媒体から再生して一時記憶手段に格納すると、復号手段がこの一時記憶手段から編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で時分割に読み出しながら並列的に復号して編集点前の素材と編集点後の素材とを生成し、編集手段が編集点前の素材と編集点後の素材とを編集点で切り替え、編集点前の素材と編集点後の素材との時間軸を合わせた編集素材を生成して表示するので、画像劣化を招致することなく圧縮素材を編集することができる。また、記録手段は、少なくとも編集対象にされた編集点前後の属性、編集点位置および編集点での切り替え態様を表す編集情報と、編集素材にスーパーインポーズされる文字情報とをそれぞれ個別に媒体記録する為、その編集情報や文字情報を記録媒体から読み出して参照すれば、前回と同じ編集を行うことができる。請求項６に記載の発明によれば、少なくとも前後に１ＧＯＰ以上の糊代が付加された編集点前の圧縮素材および編集点後の圧縮素材を記録媒体から再生して一時記憶しておき、この一時記憶された編集点前の圧縮素材と編集点後の圧縮素材とを１倍速以上の速度で時分割に読み出しながら並列的に復号して編集点前の素材と編集点後の素材とを生成し、生成した編集点前の素材と編集点後の素材とを編集点で切り替え、編集点前の素材と編集点後の素材との時間軸を合わせた編集素材を生成して表示するから、画像劣化を招致することなく圧縮素材を編集することができる。また、少なくとも編集対象にされた編集点前後の圧縮素材の各属性、編集点位置および編集点での切り替え態様を表す編集情報と、編集素材にスーパーインポーズされる文字情報とをそれぞれ個別に媒体記録する為、その編集情報や文字情報を記録媒体から読み出して参照すれば、前回と同じ編集を行うことができる。

【図面の簡単な説明】

【図１】本発明による実施の一形態である編集装置の構成を示すブロック図である。

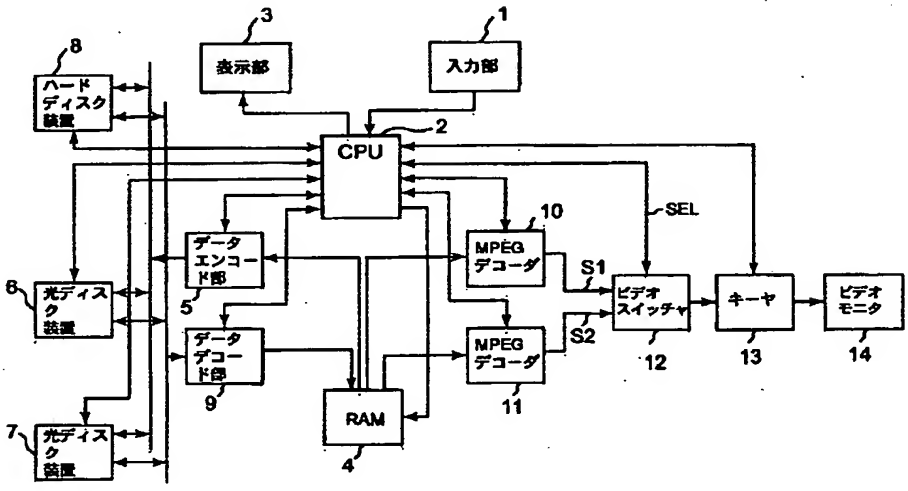
【図２】ファイルデータＦＤの構成を示す図である。

【図３】編集動作を説明するための図である。

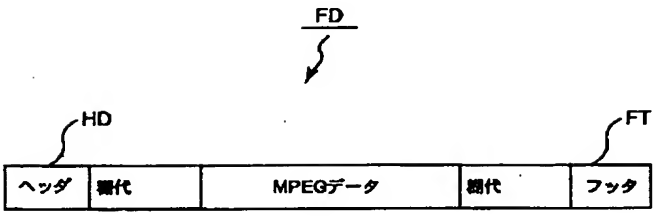
【符号の説明】

１…入力部、２…ＣＰＵ、３…表示部、４…ＲＡＭ、５…データエンコード部、６，７…光ディスク装置、８…ハードディスク装置、９…データデコード部、１０，１１…ＭＰＥＧデコーダ、１２…ビデオスイッチャ、１３…キーヤ、１４…ビデオモニタ。

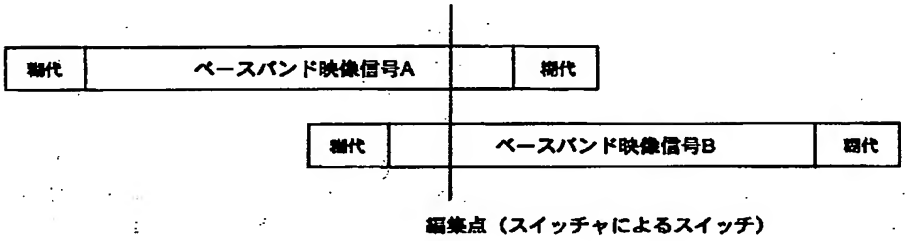
【図１】



【図２】



【図３】



フロントページの続き

(51)Int.Cl.⁷		識別記号	FI		テーマコード（参考）
H04N	5/907		H04N	5/91	N
	5/765				L
	5/92			5/92	H
	5/937			5/93	C

Fターム(参考) 5C025 BA27 BA28 CA09 DA10
5C052 AA02 AA17 AC01 CC11 DD10
GA03 GA07 GB06 GB09 GC05
GC06 GD09
5C053 FA14 FA23 FA27 GA11 GB37
HA21 HA33 JA22 KA01 KA24
LA06 LA20
5D044 AB07 BC01 BC02 CC04 DE25
DE29 DE40 DE49 EF03 EF05
FG16 FG18 GK07 HH07